

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 34462P WO	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/EP2005/001346	International filing date (day/month/year) 10.02.2005	Priority date (day/month/year) 11.02.2004
International Patent Classification (IPC) or national classification and IPC C12P5/00		
Applicant MAXENS GMBH		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of _____ sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. 1 and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
 - ☐ international search (Rule 12.3 and 23.1(b))
 - ☐ publication of the international application (Rule 12.4)
 - ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-9 _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☒ the claims:
 - nos. _____ as originally filed/furnished
 - nos.* _____ as amended (together with any statement) under Article 19
 - nos.* 1-23 _____ received by this Authority on 30.11.2005 with letter of 30.11.2005
 - nos.* _____ received by this Authority on _____
 - ☐ the drawings:
 - sheets _____ as originally filed/furnished
 - sheets* _____ received by this Authority on _____
 - sheets* _____ received by this Authority on _____
 - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-23	YES
	Claims	-	NO
Inventive step (IS)	Claims	-	YES
	Claims	1-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims	-	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D2: ONKEN J ET AL: "Effects of R-(+)-limonene on submerged cultures of the terpene transforming basidiomycete *Pleurotus sapidus*" JOURNAL OF BIOTECHNOLOGY, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 69, no. 2-3, 15 April 1999 (1999-04-15), pages 163-168, XP004168124 ISSN: 0168-1656

D3: CROAN SUKI C: "Lyophilization of hypha-forming tropical wood-inhabiting Basidiomycotina" MYCOLOGIA, vol. 92, no. 4, July 2000 (2000-07), pages 810-817, XP002336165 ISSN: 0027-5514

D4: SUNDARI S KRISHNA ET AL: "Freeze-drying vegetative mycelium of *Laccaria fraterna* and its subsequent regeneration" BIOTECHNOLOGY TECHNIQUES, vol. 13, no. 7, July 1999 (1999-07), pages 491-495, XP002336166 ISSN: 0951-208X

The comments of the applicant with regard to inventive step of the existing set of claims (letter of 30 November 2005) were taken into consideration when the present preliminary report was drawn up.

1. Novelty and inventive step (PCT Article 33(2)(3))

1.1 The present application relates to a method of producing flavour-active terpenes from terpene hydrocarbons, the reaction being catalysed by microorganisms from the classes Ascomycetes, Basidiomycetes or Deuteromycetes and the

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Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

microorganisms being added in the form of a lyophilized mycelium which is first rehydrated.

- 1.2 The subject matter of claims 1-23 is acknowledged as being novel over the cited prior art within the meaning of PCT Article 33(2).

- 1.3 D2 describes the preparation of the terpene carvone from the terpene hydrocarbon limonene by biotransformation with the Basidiomycete *Pleurotus sapidus* (page 165, column 1, section 4-page 166, column 1, line 3; fig. 1)

It can be seen from D3 and D4 that mycelia of various representatives of the class Basidiomycetes can be lyophilized for storage purposes and that, after their rehydration, are capable of growing at least as well, in some cases even better than, mycelia which have not been lyophilized (D3: page 812, column 1, line 6-column 2, line 6; page 813, column 2, sections 2 and 3; table 1; D4: page 492, column 2, section 2-page 493, column 1, section 1).

Starting from the document D2, which is considered to be the closest prior art because it also relates to the production of a terpene from terpene hydrocarbon with the aid of a microorganism, the difference between D2 and the process according to the invention is that, in accordance with the invention, the microorganism is added in the form of a lyophilized mycelium which has been rehydrated, while D2 reports on a "preculture" whose production is not mentioned (page 164, column 2, sections 1 and 2).

The application documents do not reveal an advantageous effect of using a lyophilized mycelium in contrast to the use of a "preculture" whose preparation procedure remains unknown. Since a person skilled in the art knows that fungal cultures can be grown from lyophilized and rehydrated mycelium (see, for example, D3 and D4), he would consider this step to be a customary alternative to a "preculture" as described in D2; proceeding from D2, he would therefore apply the process

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	<p>according to the invention in order to produce a terpene from terpene hydrocarbon with the aid of a microorganism.</p> <p>In this respect, the applicant argues in their letter of 30 November 2005 that the use according to the application, of a lyophilized mycelium, would have the advantage over the closest prior art (D2) that the perforation of the mycelial membrane would allow a more rapid exchange of metabolites and products and substrates. As a result, an inhibition of the biotransformation would be reduced, or entirely avoided, i.e. the biotransformation would be activated, in contrast to the closest prior art method described.</p> <p>However, the application documents contain no data which credibly demonstrate such an advantageous effect of the application over the prior art. In the absence of suitable proof, the information provided by the applicant constitutes no more than a statement of the above-described advantageous effect. However, such a statement cannot be considered to form the basis for acknowledging inventive step. Since it can also not be seen that the subject matter of one of the dependent claims would be suitable for establishing inventive step, the subject matter of claims 1-23 will not meet the requirements of PCT Article 33(3) until the above-described alleged advantageous effect is demonstrated.</p>

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Box No. VI

Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 02053151	11.07.2002	26.03.2002	08.08.2001

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure
(day/month/year)Date of written disclosure
referring to non-written disclosure
(day/month/year)